CLAIMS

1.   A   method   of   identifying   a   person   by
fingerprint/toeprint recognition, consisting in:
   - producing a digital photograph (at 11) giving a
digitized image (13) of a fingerprint/toeprint or part
of a fingerprint/toeprint (E) present on a surface (3)
of an object (12);
   - analyzing (15) said digitized image of the
fingerprint/toeprint;
   - detecting characteristic points therein;
   - exchanging (16) the digital data of the
detected characteristic points with a data bank (17)
storing digital data of the characteristic points of a
multiplicity of fingerprints/toeprints in its memory,
said stored digital data corresponding to plane images
of the multiplicity of fingerprints/toeprints;
   - comparing (18) the digital data of the
abovementioned detected characteristic points with the
digital data stored in the memory of the data bank; and
   - identifying   a   person   possessing   said
fingerprint/toeprint   as   a   result   of   the   above
comparison,
characterized in that, when the fingerprint/toeprint
(E) is on a curved surface (3), said digitized image is
transformed into a corrected digitized image, with a
distortion level below a predetermined threshold, by
projecting it onto a plane by means of algorithm
processing, said corrected image showing the
characteristic points of said fingerprint/toeprint in a
plane, in that said characteristic points in said
corrected image are detected and in that the current
digital data of said characteristic points is exchanged
(16) with the abovementioned data bank (17) and
compared (18) with the digital data stored in said data
bank.

2.   The method as claimed in claim 1, characterized in
that, prior to the algorithm processing of the

digitized image, a pre-established curved surface model is selected that has a shape corresponding or similar to the shape of the curved surface to which the fingerprint/toeprint is affixed and in that data

5 relating to the dimensions of the curved surface is supplied to the algorithm processing means.

3.   The method as claimed in claim 2, characterized in that the pre-established curved surface model chosen is

10 a cylindrical surface of revolution, a conical or frustoconical surface of revolution, or a spherical surface.

4.   The method as claimed in claims 2 and 3,

15 characterized in that, if the curved surface appears on the digitized image in the form of a semicylindrical or semiconical surface of revolution, information about the respective positions of the two diametrically opposed generatrices visible in the digitized image is

20 sent to the algorithm processing means, whereby the algorithm processing means deduce therefrom the geometrical characteristics (radius, axis projection position) of the curved surface.

25 5.   The method as claimed in claim 4, characterized in that the algorithm processing means associate, with each point in the initial digitized image of the fingerprint/toeprint rolled up on the curved surface, a point lying in a projection plane such that the linear

30 distance of said point in the plane relative to the projection of the axis of said surface is equal to the curvilinear distance of said point in the initial image relative to the projection of said axis onto said surface.

35

6.   The method as claimed in claim 5, characterized in that, at any point (P) in the projection plane, the algorithm processing means determine a projected point (P_1) such that:

$$O_1P_1 = r\cos(\pi/2 - O_1P/r)$$

O_1 being the projection of the axis of the surface onto said plane and r being the estimated radius of the curved surface, and then associate with the projected
5   point (P_1) in the plane, a point (P_2) on the curved surface, the projected point (P_1) of which is the projection on the plane.

7.   The method as claimed in any one of the preceding
10   claims, characterized in that, if the fingerprint/toeprint (E) is found affixed to a surface of complex shape, the image (3) of said surface of complex shape is broken down into partial images (3a, 3b, 3c) of surfaces of simple shape, in that each
15   partial image (2Aa, 2Ab, 2Ac) is processed in relation to the shape of the respective surface in order to obtain corrected partial images (2Ba, 2Bb, 2Bc) and in that the corrected partial images are juxtaposed so as to obtain a corrected image of the fingerprint/toeprint
20   as a mosaic.

CLAIMS

1.   A   method   of   identifying   a   person   by
fingerprint/toeprint recognition, consisting in:
-   producing a digital photograph (at 11) giving a
digitized image (13) of a fingerprint/toeprint or part
of a fingerprint/toeprint (E) present on a surface (3)
of an object (12);
-   analyzing (15) said digitized image of the
fingerprint/toeprint;
-   detecting characteristic points therein;
-   exchanging (16) the digital data of the
detected characteristic points with a data bank (17)
storing digital data of the characteristic points of a
multiplicity of fingerprints/toeprints in its memory,
said stored digital data corresponding to plane images
of the multiplicity of fingerprints/toeprints;
-   comparing (18) the digital data of the
abovementioned detected characteristic points with the
digital data stored in the memory of the data bank; and
-   identifying   a   person   possessing   said
fingerprint/toeprint as a result of the above
comparison,
characterized, when the fingerprint/toeprint (E) is on
a curved surface (3), a pre-established model of a
curved semicylindrical or semiconical surface of
revolution having a shape corresponding or close to the
shape of the curved surface or of a portion of the
curved surface, to which the fingerprint/toeprint is
fixed, is selected, information about the respective
positions of the two diametrically opposed generatrices
visible in the digitized image is sent to algorithm
processing means, whereby the algorithm processing
means deduce therefrom the geometrical characteristics
(radius, axis projection position) of the curved
surface, and said digitized image is transformed into a
corrected digitized image, with a distortion level
below a predetermined threshold, by projecting it onto

AMENDED SHEET

a plane using said algorithm processing means, said corrected image showing the characteristic points of said fingerprint/toeprint in a plane, whereby said plane corrected image is used for detecting the

5   characteristic points of the fingerprint/toeprint and for identifying the person.

2.   The method as claimed in claim 1, characterized in that the algorithm processing means associate, with

10   each point in the initial digitized image of the fingerprint/toeprint rolled up on the curved surface, a point lying in a projection plane such that the linear distance of said point in the plane relative to the projection of the axis of said surface is equal to the

15   curvilinear distance of said point in the initial image relative to the projection of said axis onto said surface.

3.   The method as claimed in claim 2, characterized in

20   that, at any point (P) in the projection plane, the algorithm processing means determine a projected point (P_1) such that:

$$O_1P_1 = r\cos(\pi/2 - O_1P/r)$$

O_1 being the projection of the axis of the surface onto

25   said plane and r being the estimated radius of the curved surface, and then associate with the projected point (P_1) in the plane, a point (P_2) on the curved surface, the projected point (P_1) of which is the projection on the plane.

30

4.   The method as claimed in any one of the preceding claims,   characterized   in   that,   if   the fingerprint/toeprint (E) is found affixed to a surface of complex shape, the image (3) of said surface of

35   complex shape is broken down into partial images (3a, 3b, 3c) of surfaces of simple shape, in that each partial image (2Aa, 2Ab, 2Ac) is processed in relation to the shape of the respective surface in order to

AMENDED SHEET

obtain corrected partial images (2Ba, 2Bb, 2Bc) and in that the corrected partial images are juxtaposed so as to obtain a corrected image of the fingerprint/toeprint as a mosaic.